

**Hibbs, David R NWK**

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**From:** Hibbs, David R NWK  
**Sent:** Wednesday, August 20, 2014 4:34 PM  
**To:** 'Garcia, Delia'  
**Cc:** Trier, Patrick H NWK; Cory, Luke M NWK; Schumann, Thomas L NWK  
**Subject:** RE: Request to review case file 2014-00195 (Black Tea Oil) (UNCLASSIFIED)  
**Attachments:** smoky hill river at elkader ks\_gage info.xlsx

**Classification:** UNCLASSIFIED  
**Caveats:** NONE

Delia - This email concerns EPA's jurisdictional questions about the Black Tea Oil site on the Smoky Hill River in western Kansas.

I'm forwarding for EPA's review, some information and email correspondence between Patrick Trier, our COE-NWD Jurisdictional Subject Matter Expert, and Matthew Mersel, who is the lead Research Scientist in charge of the newly organized National Technical Committee on Ordinary High Water Mark. Matthew Mersel is also co-author of the latest OHWM guide for the Western Mountain, Valleys, and Coast Region.

The National Technical Committee for the OHWM (NTC-OHWM), a workgroup comprised of both Corps and EPA personnel and experts from academic institutions, is meeting on August 26 & 27 to lay some of the groundwork for developing the national OHWM delineation manual.

Thanks,

David R. Hibbs  
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-----Original Message-----

**From:** Trier, Patrick H NWK  
**Sent:** Wednesday, August 20, 2014 2:46 PM  
**To:** Hibbs, David R NWK; Cory, Luke M NWK  
**Subject:** FW: NTC-OHWM meeting - reading materials

FYI,

Here is some info I got from Matt Mersel, the OHWM expert from ERDC.

-Patrick

-----Original Message-----

**From:** Trier, Patrick H NWK

Sent: Wednesday, August 20, 2014 2:45 PM  
To: Mersel, Matthew K CONTRACTOR @ ERD-NH  
Subject: RE: NTC-OHWM meeting - reading materials (UNCLASSIFIED)

I got the 1510cfs 2 year event information from this website.

<http://ks.water.usgs.gov/streamflow-statistics>

I use this site often. You simply chose the county, which is in this case "Logan". Click on the Flood Frequency radio button and it gives you the flood frequencies for the particular gage station you want. It also has the information estimated based on certain locations you can click on the map. This info comes from a USGS publication from 2000. The write up says that it is based on a weighted least-squares regression model. It has been pretty handy for me.

I would guess that the difference in your 1210cfs calculation and this one (1510cfs) is that it is based on info through 1997.

Let me know if you think this site still has merit. It is the only tool I have found that can quickly give me estimated information for areas far from a gage station.

-Patrick

-----Original Message-----

From: Mersel, Matthew K CONTRACTOR @ ERD-NH  
Sent: Wednesday, August 20, 2014 1:47 PM  
To: Trier, Patrick H NWK  
Subject: RE: NTC-OHWM meeting - reading materials

Patrick,

Please see the attached spreadsheet.

I estimated various flood recurrence intervals using the data from the Smoky Hill River USGS Gage at Elkader, KS (06860000). I used log Pearson analysis, a standard means of deriving recurrence intervals from annual peak flow series. I estimated the flows using 1) the entire record (1939-2013 water years) and 2) using only a partial record (1969-2013 water years). I did this because, if you look at the plot of peak flows in the attached spreadsheet, it would appear that the modern hydrology has changed since the 60s and prior. After 1969 there are no floods greater than ~10,000 cfs, while there are many such floods before that year.

You'll see that the recurrence intervals calculated using the full record are ~2x as large in magnitude as those calculated using only the partial record from the last ~40 years. In both instances, the 2 year flood I calculated was less than the 1500 cfs you previously mentioned. When using the partial record (which I would think is more accurate for today's conditions) the 1.5 year flood is estimated at ~300 cfs and the 2 year flood is estimated at ~634 cfs. From these numbers you might conclude that the water levels corresponding to 500 cfs in the image you showed me are probably in the ballpark of the OHWM. Note, in the attached spreadsheet, that the difference in water surface elevation (gage height) between the 1.5 and 5 year floods is less than 2 feet. Also note that the gage heights are much different regardless of which period of record is used in the analysis (despite rather large discrepancies in streamflow magnitude). So your OHWM is very likely within a couple feet of the water levels experienced at 500 cfs.

The above information and lines of reasoning may help to support the field evidence you have. Let me know if you have any other questions.

Matt

-----Original Message-----

From: Trier, Patrick H NWK  
Sent: Tuesday, August 19, 2014 1:55 PM  
To: Mersel, Matthew K CONTRACTOR @ ERD-NH  
Subject: RE: NTC-OHWM meeting - reading materials

Thanks Matt, I am looking forward to our meeting.

Are you going to be available later this afternoon? I would like to pick your brain regarding the material I sent you a while back regarding a pending violation I am working on that involves OHWM concerns.

-Patrick

-----Original Message-----

From: Mersel, Matthew K CONTRACTOR @ ERD-NH  
Sent: Tuesday, August 19, 2014 12:44 PM  
To: Vanderbilt, Forrest B IWR; Buckler, Kathleen A LRB; Allen, Aaron O SPL; Art Parola (University of Louisville); Lichvar, Robert W ERDC-CRREL-NH; Brian Topping (USEPA Wetlands Division); Ellen Wohl (Colorado State University); Ken Fritz (USEPA Office of Research and Development); Trier, Patrick H NWK; Kichefski, Steven L SAW; Tracie Nadeau (USEPA Region 10); Yost, Sally L ERD-MS  
Subject: NTC-OHWM meeting - reading materials (UNCLASSIFIED)

All,

The NTC-OHWM meeting is in one week, and I'd like to distribute some materials for you to look over before we meet. Please do not share any of these materials (except those that are already publically available) with anyone outside of the committee members or meeting participants.

- 1) Agenda - This is only a rough schedule to give you a sense of the topics we'll be discussing. The participant list is included in the agenda.
- 2) OHWM Background and Concepts - This is an early draft of a paper I've started writing to summarize some of the background information and concepts pertaining to the OHWM (the paper is by no means complete, and it ends abruptly). There's a good bit of overlap with some of the introductory material in the attached Western Mountain OHWM Delineation Guide, but there's additional historical and other information that you might find interesting or useful. With input from the Committee I'd like to expand and revise this paper to serve as a foundation to the future national manual.
- 3) OHWM Summary Report - For various reasons, I was not able to distribute the OHWM survey I requested feedback on several weeks ago. Instead, last week I held a webinar with Corps Regulatory personnel from all regions of the country to get feedback on current OHWM delineation practices and on problematic issues the Districts are experiencing with respect to OHWM delineation in rivers and streams. The attached document presents a short summary of some of the main points I took away from that call.
- 4) Western Mountains OHWM Delineation Guide - Many of you have already seen various versions of this guide in draft stage. There is material on OHWM concepts, indicators, and methods that will help to get everyone up to speed on our current approach, lines of reasoning, etc.

\*this is the final version, due to be publically released this week

5) OHWM Webpage

<<http://www.erdc.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/9254/Article/486085/ordinary-high-water-mark-ohwm-research-development-and-training.aspx>> . Links to all prior ERDC reports pertaining to the OHWM can be found on this site. I encourage you to look over the 2008 Arid West OHWM Delineation Guide and other supporting documents.

The overall focus of this initial meeting will be to get everyone up to speed on OHWM issues and future plans and to begin discussing the many various issues we will try to address as a committee going forward. More specifically, I'm hopeful that we can begin to refine our understanding of the OHWM at a conceptual level (i.e., what is it we're trying to delineate) and work towards a consensus technical definition of the OHWM.

I'm very much looking forward to meeting with all of you next week, and I'm confident that we'll have an interesting and productive first meeting. Please let me know if you have any questions.

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Matthew K. Mersel

Research Physical Scientist

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Classification: UNCLASSIFIED

Caveats: NONE

		peak flow	gage height
6860000	5/30/1938	71000	13.2
6860000	7/1/1940	3770	5.7
6860000	7/2/1941	8000	7.01
6860000	4/18/1942	1780	4.59
6860000	8/10/1943	201	2.66
6860000	5/1/1944	738	3.47
6860000	8/6/1945	1720	4.43
6860000	7/19/1946	5170	6.28
6860000	10/7/1946	10500	7.55
6860000	7/16/1948	1270	4.07
6860000	6/7/1949	5620	6.33
6860000	7/30/1950	5840	6.57
6860000	6/11/1951	19700	8.79
6860000	7/22/1952	442	2.64
6860000	8/16/1953	460	2.7
6860000	8/31/1954	36	1.2
6860000	6/17/1955	21100	9.02
6860000	7/3/1956	9680	6.58
6860000	7/11/1957	15100	7.93
6860000	7/22/1958	3360	4.74
6860000	8/22/1959	330	2.66
6860000	5/16/1960	1850	4.08
6860000	6/6/1961	4510	5.27
6860000	6/8/1962	13800	7.58
6860000	5/29/1963	530	3.22
6860000	6/14/1964	8240	6.14
6860000	8/24/1965	420	3.3
6860000	7/20/1966	1710	4.38
6860000	6/29/1967	2880	4.52
6860000	8/9/1968	1260	3.92
6860000	8/23/1969	22300	8.85
6860000	10/19/1969	112	2.19
6860000	7/29/1971	980	3.56
6860000	7/28/1972	1280	3.82
6860000	8/4/1973	205	2.61
6860000	6/8/1974	537	3.13
6860000	5/29/1975	2690	4.84
6860000	5/21/1976	848	3.74
6860000	7/25/1977	2460	4.73
6860000	6/4/1978	359	3.12
6860000	7/23/1979	3110	4.82
6860000	8/15/1980	1060	3.99
6860000	5/17/1981	6530	5.95
6860000	7/27/1982	967	3.91
6860000	9/15/1983	2480	4.66
6860000	5/19/1984	42	2.71
6860000	9/13/1985	29	2.55
6860000	7/6/1986	0.24	1.34
6860000	7/9/1987	7310	8.22
6860000	5/18/1988	255	5.41
6860000	5/19/1989	13	4.54
6860000	7/28/1990	196	5.03
6860000	7/1/1991	579	6.12
6860000	8/31/1992	3720	7.03
6860000	7/20/1993	4080	7.21
6860000	7/15/1994	298	5.24
6860000	7/21/1995	950	5.73
6860000	8/1/1996	4260	8.17
6860000	8/6/1997	697	5.92
6860000	7/10/1998	4010	7.78
6860000	8/7/1999	638	6.35
6860000	7/18/2000	42	5.14
6860000	7/27/2001	2390	7.3
6860000	5/24/2002	22	4.98
6860000	5/24/2003	43	5.39
6860000	5/17/2004	212	5.92
6860000	6/22/2005	18	5.15
6860000	6/1/2006	341	6.13
6860000	7/13/2007	2180	7.31
6860000	8/7/2008	236	5.89
6860000	9/8/2009	273	6.35
6860000	6/21/2010	4090	2
6860000	6/21/2011	77	5.68
6860000	10/8/2011	1950	7.74
6860000	8/8/2013	2350	7.84

		1.1yr	1.5yr	2yr	5yr	10yr
full record	discharge	80	530	1210	5337	10857
	gage height	5.67	6.68	7.3	8.61	9.46
using only 1969-2013	discharge	48	293	634	2441	4556
	gage height	5.49	6.3	6.81	7.87	8.45

